002760 9956960

Figure 1a

Basic Adaptive FIR Filter Structure

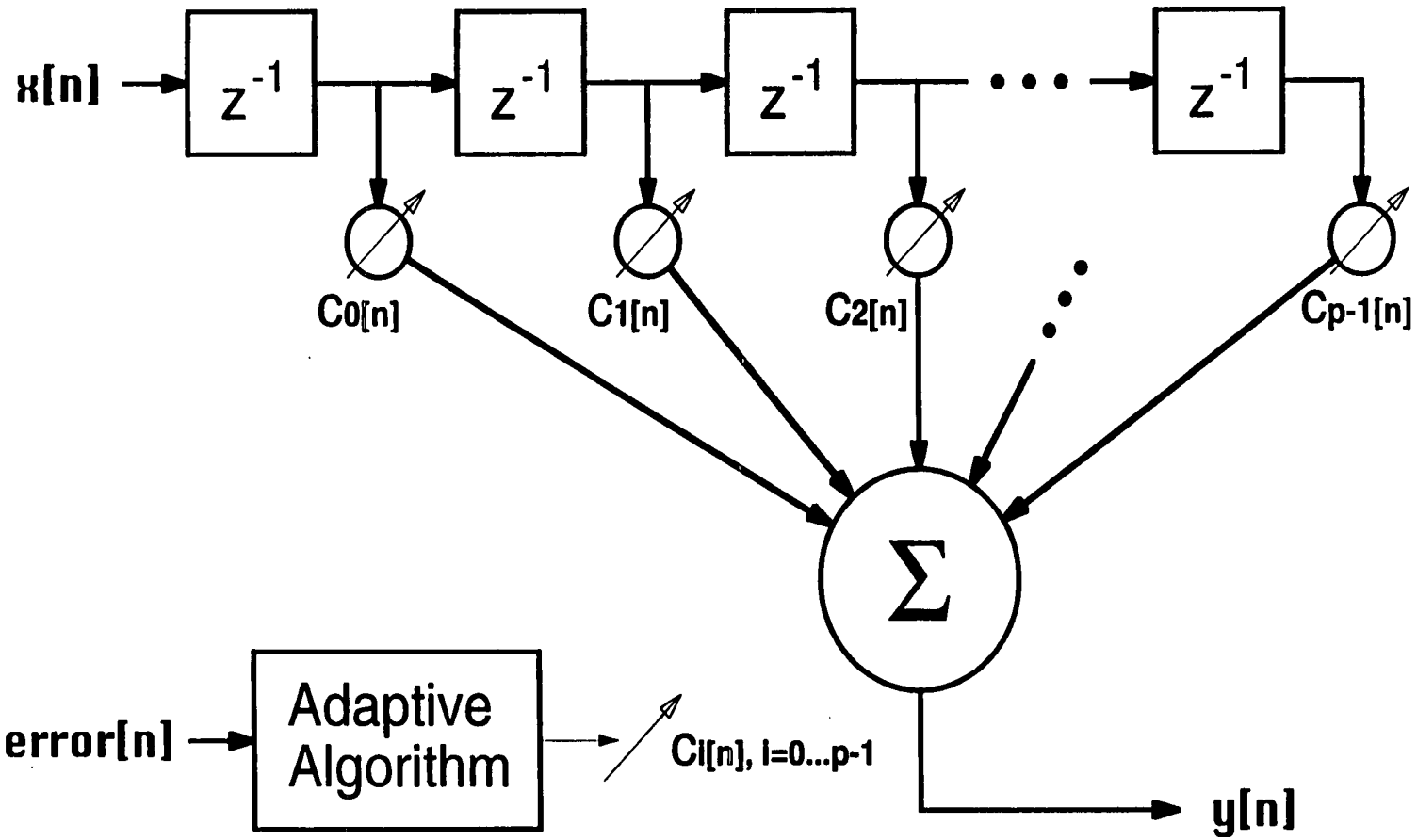


Figure 1b

Echo Canceller Using an Adaptive FIR Filter

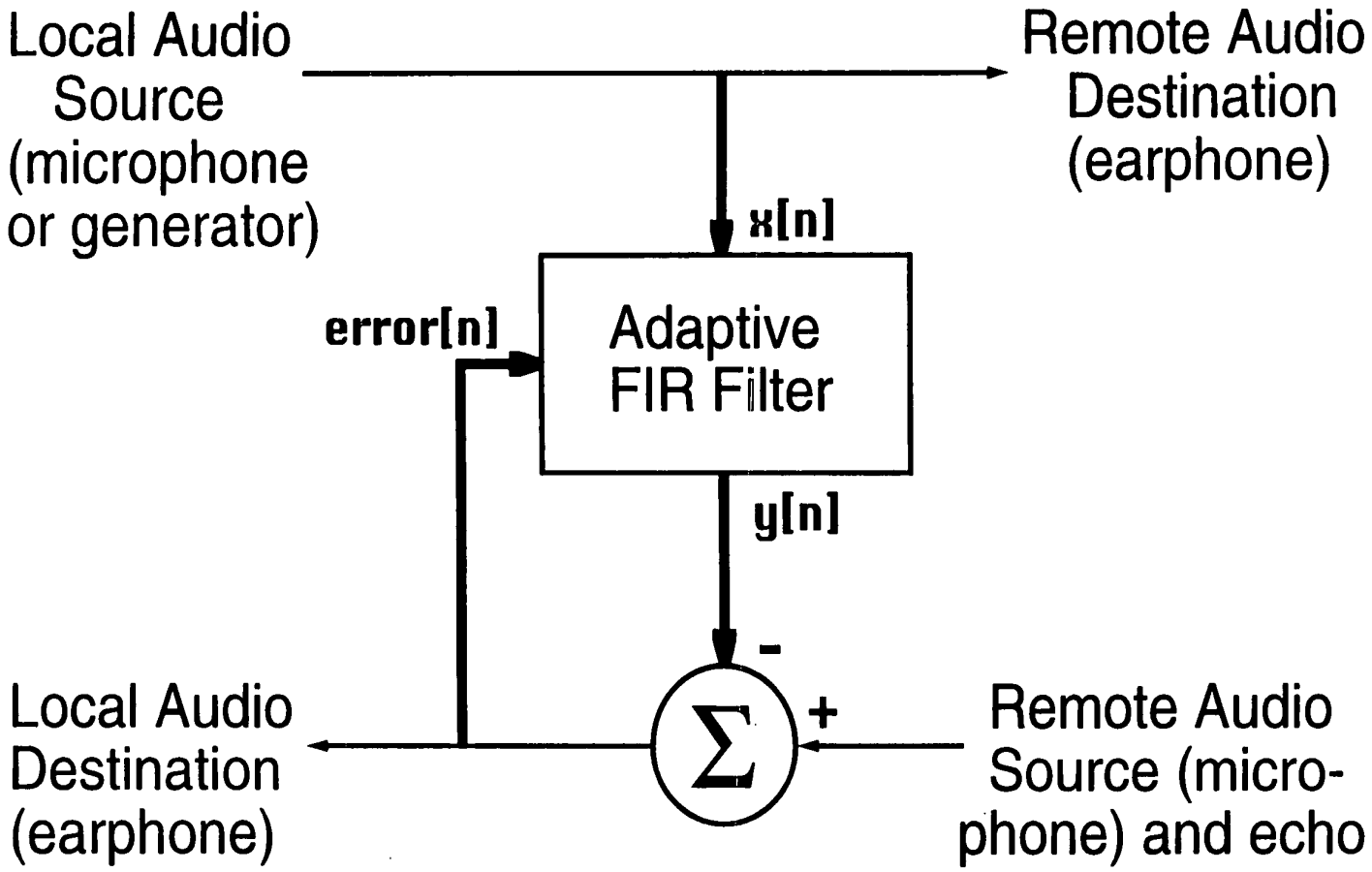


Figure 2

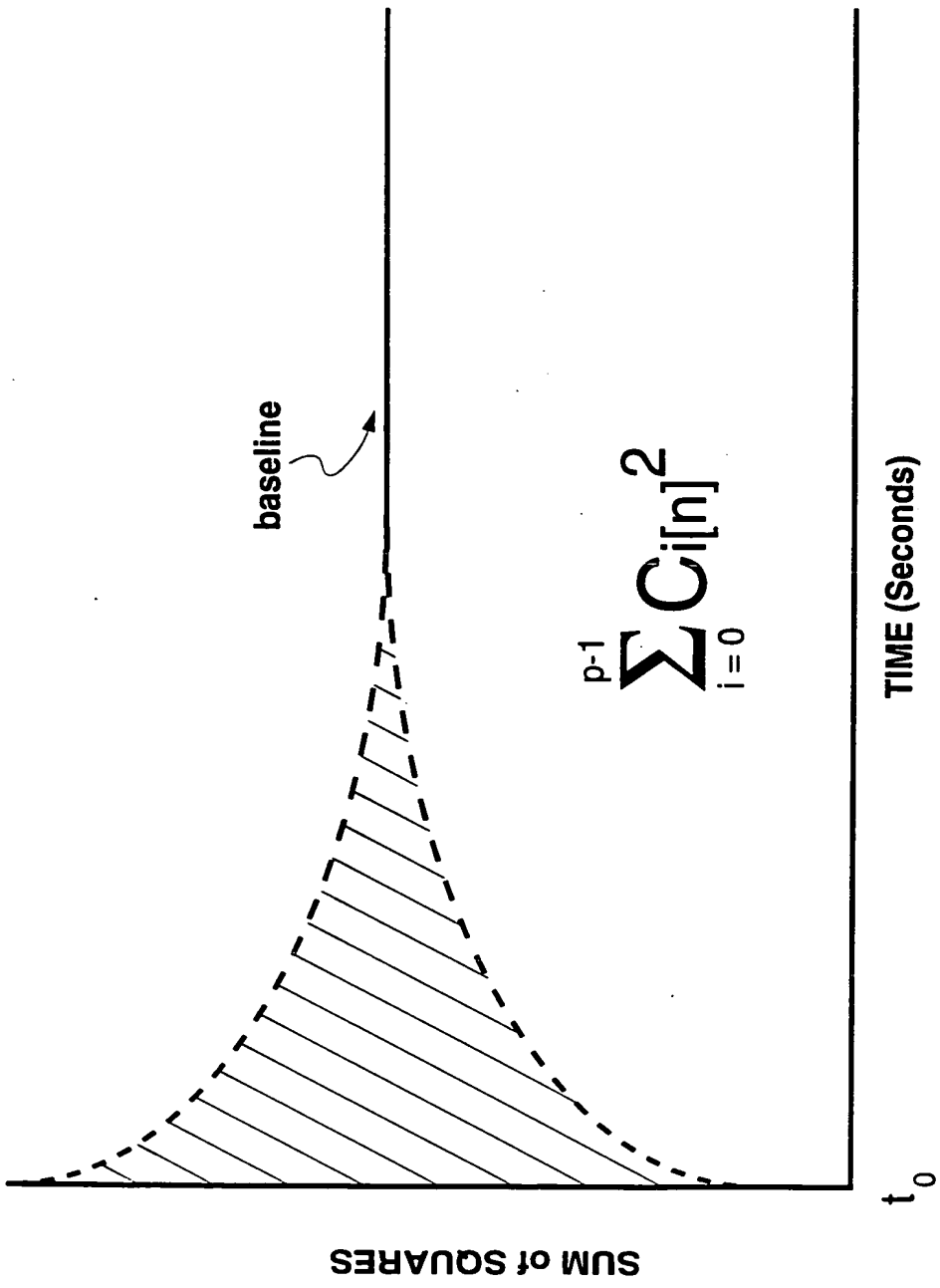

ADAPTIVE FIR FILTER ATTAINING STEADY STATE
baseline
$\sum_{i=0}^{p-1} Ci[n]^2$
SUM of SQUARES
TIME (Seconds)
t_0

Figure 2A

TYPICAL THREE-WAY FILTER RESPONSE

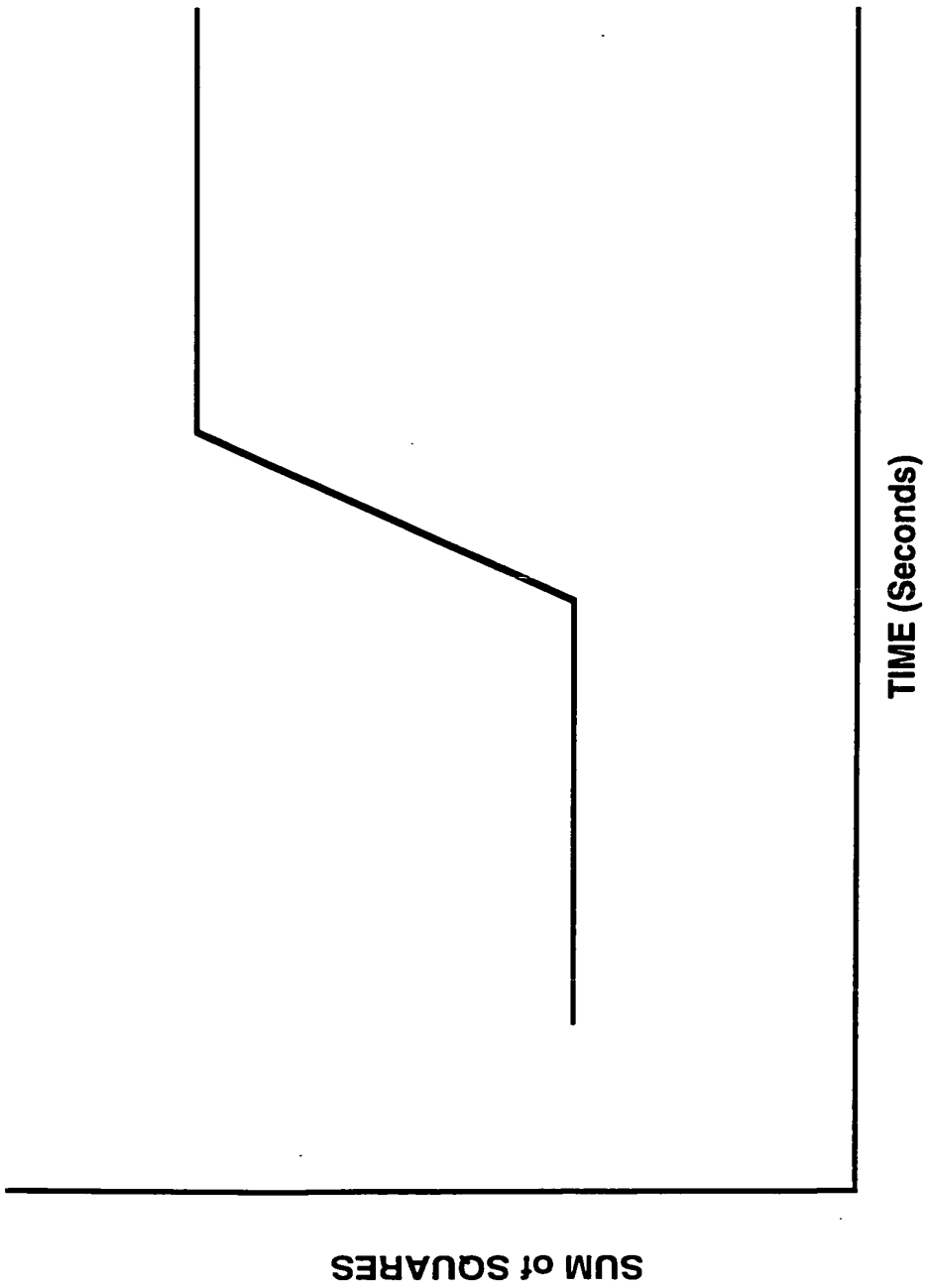


Figure 2B

TYPICAL FILTER RESPONSE WHEN CALLED PARTY IGNORES CALL WAITING NOTIFICATION

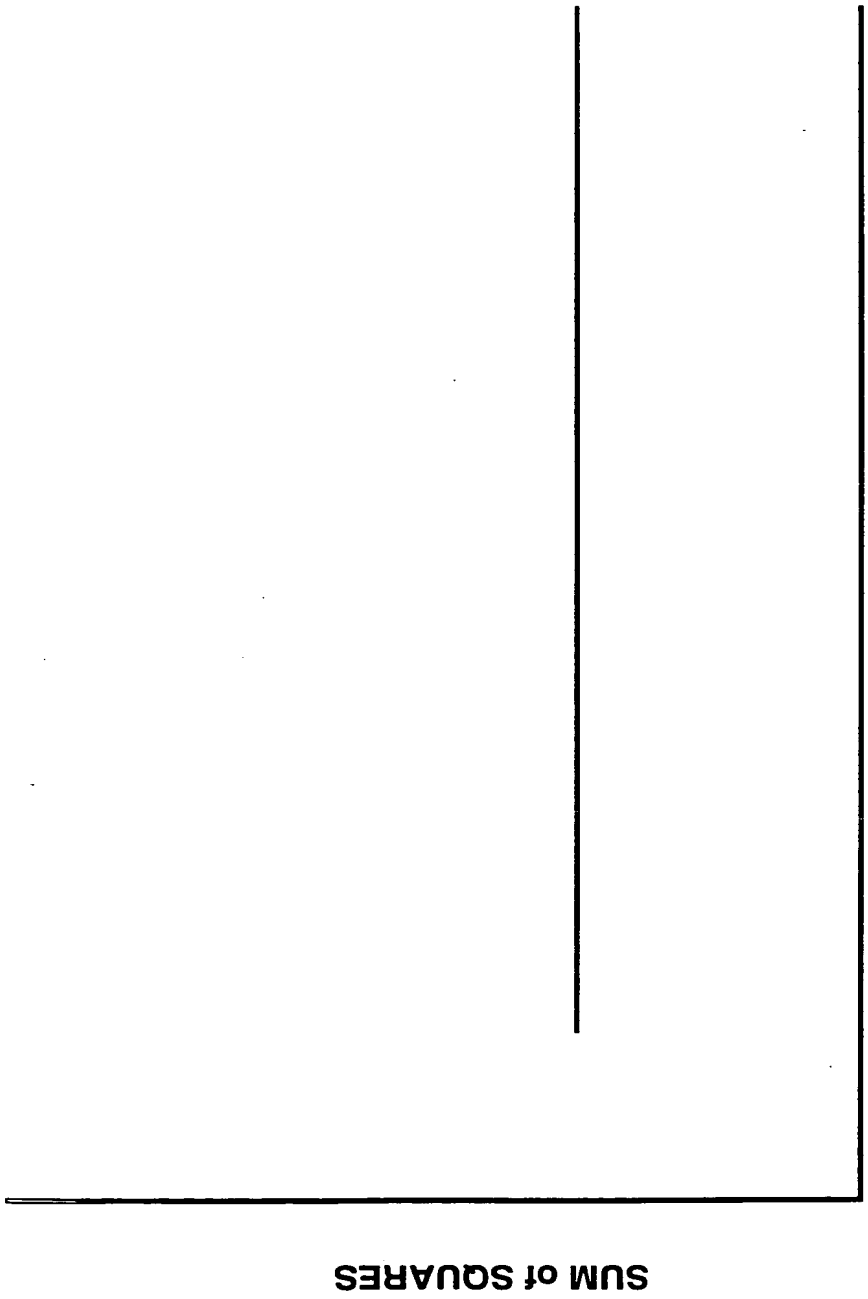


Figure 2C

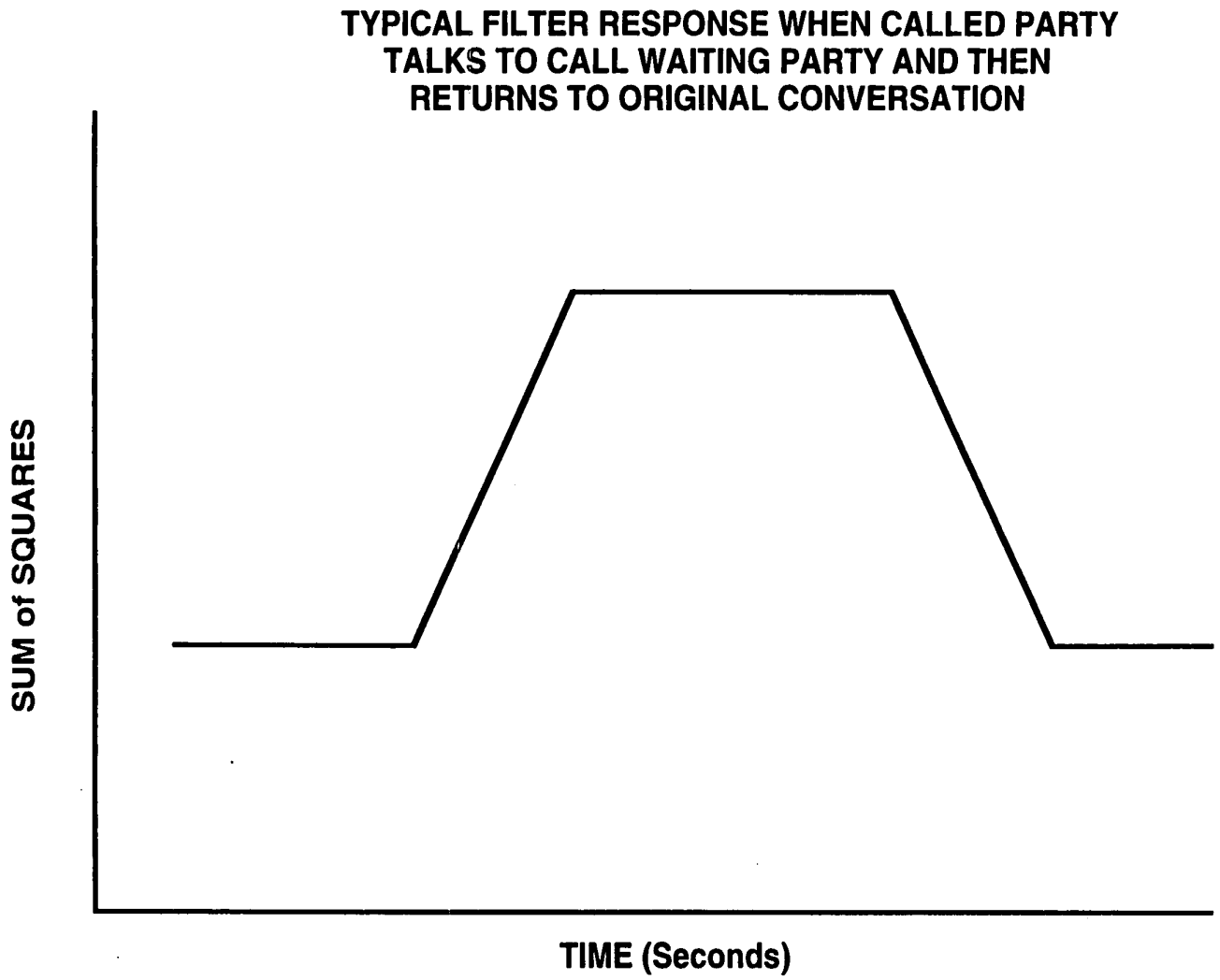
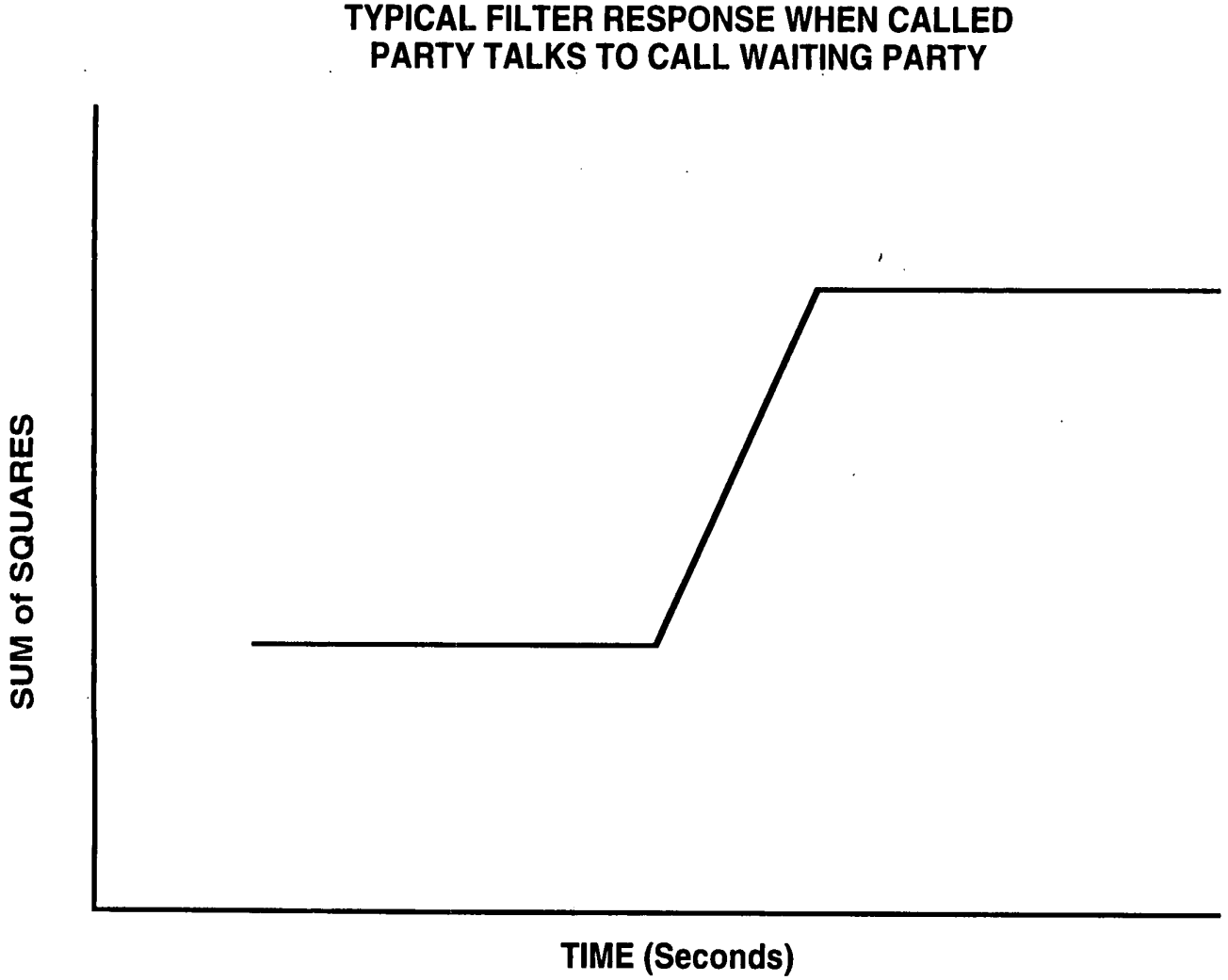

TYPICAL FILTER RESPONSE WHEN CALLED PARTY
TALKS TO CALL WAITING PARTY AND THEN
RETURNS TO ORIGINAL CONVERSATION
SUM of SQUARES
TIME (Seconds)

Figure 2D


TYPICAL FILTER RESPONSE WHEN CALLED PARTY TALKS TO CALL WAITING PARTY
SUM of SQUARES
TIME (Seconds)

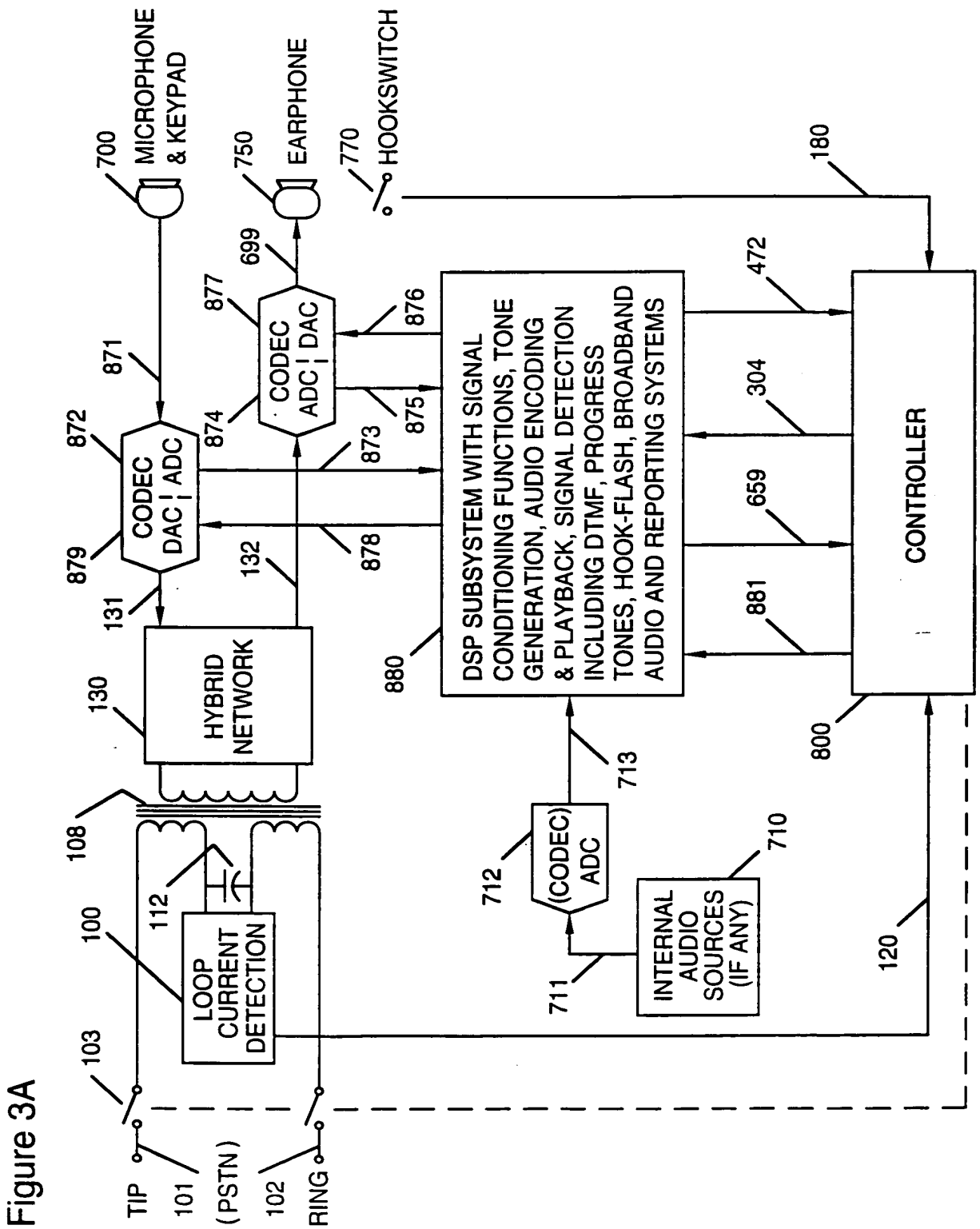

TIP
101
(PSTN)
102
RING
103
LOOP CURRENT DETECTION
100
112
108
HYBRID NETWORK
130
131
132
CODEC DAC ADC
879
872
871
CODEC ADC DAC
877
874
875
876
873
878
699
700
MICROPHONE & KEYPAD
750
EARPHONE
770
HOOKSWITCH
180
DSP SUBSYSTEM WITH SIGNAL CONDITIONING FUNCTIONS, TONE GENERATION, AUDIO ENCODING & PLAYBACK, SIGNAL DETECTION INCLUDING DTMF, PROGRESS TONES, HOOK-FLASH, BROADBAND AUDIO AND REPORTING SYSTEMS
880
472
304
659
881
CONTROLLER
800
120
713
712
(CODEC) ADC
711
INTERNAL AUDIO SOURCES (IF ANY)
710

Figure 3A

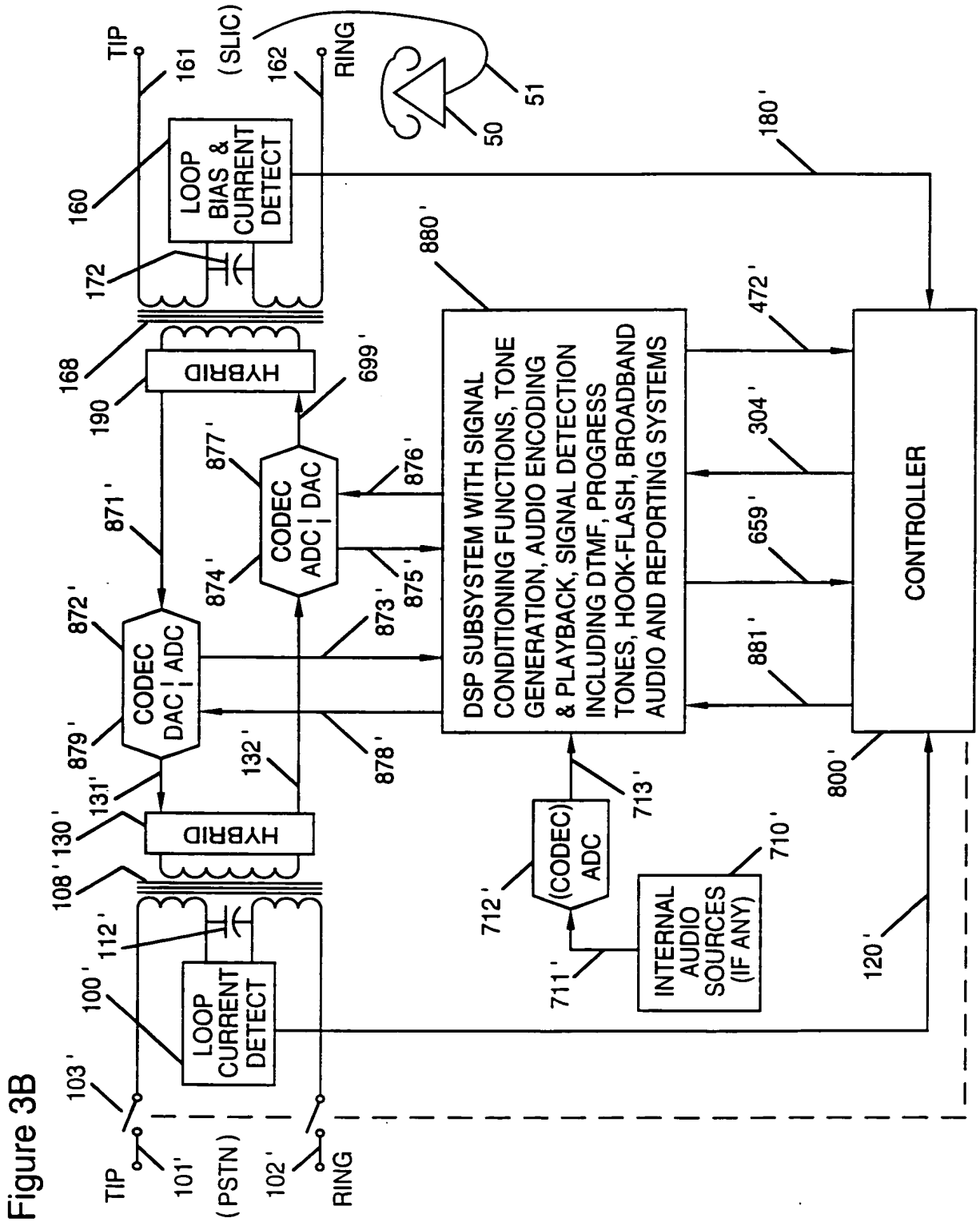

TIP
161
(SLIC)
162
RING
50
51
LOOP BIAS & CURRENT DETECT
160
172
180'
880'
472'
304'
659'
881'
CONTROLLER
800'
DSP SUBSYSTEM WITH SIGNAL CONDITIONING FUNCTIONS, TONE GENERATION, AUDIO ENCODING & PLAYBACK, SIGNAL DETECTION INCLUDING DTMF, PROGRESS TONES, HOOK-FLASH, BROADBAND AUDIO AND REPORTING SYSTEMS
HYBRID
168
190
699'
877'
876'
CODEC ADC DAC
874'
875'
871'
872'
873'
CODEC DAC ADC
879'
878'
131'
132'
HYBRID
108' 130'
712'
(CODEC) ADC
713'
711'
INTERNAL AUDIO SOURCES (IF ANY)
710'
112'
100'
LOOP CURRENT DETECT
120'
103'
TIP
101'
(PSTN)
102'
RING

Figure 3B

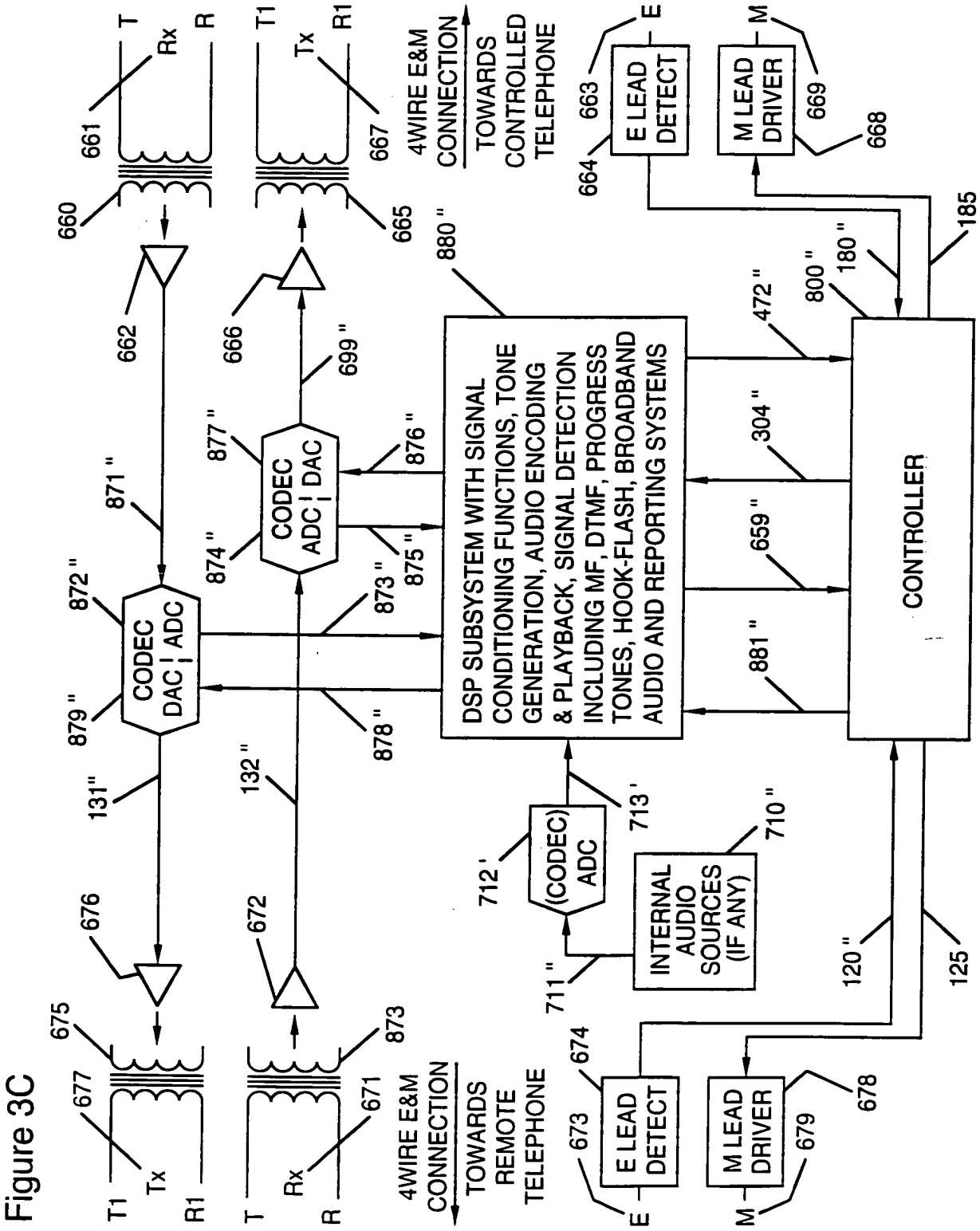

T
Rx
R
661
660
662
T1
Tx
R1
667
665
666
699 "
4WIRE E&M CONNECTION
TOWARDS CONTROLLED TELEPHONE
E LEAD DETECT
663
664
E
M LEAD DRIVER
669
668
M
185
880 "
800 "
180 "
472 "
304 "
659 "
881 "
DSP SUBSYSTEM WITH SIGNAL CONDITIONING FUNCTIONS, TONE GENERATION, AUDIO ENCODING & PLAYBACK, SIGNAL DETECTION INCLUDING MF, DTMF, PROGRESS TONES, HOOK-FLASH, BROADBAND AUDIO AND REPORTING SYSTEMS
CONTROLLER
CODEC ADC ¦ DAC
877 "
876 "
874 "
875 "
CODEC DAC ¦ ADC
871 "
872 "
873 "
879 "
878 "
131 "
132 "
712 '
(CODEC) ADC
713 '
711 "
INTERNAL AUDIO SOURCES (IF ANY)
710 "
120 "
125
676
672
675
677
T1
Tx
R1
T
Rx
R
673
671
873
4WIRE E&M CONNECTION
TOWARDS REMOTE TELEPHONE
E LEAD DETECT
674
E
M LEAD DRIVER
679
678
M

Figure 3C

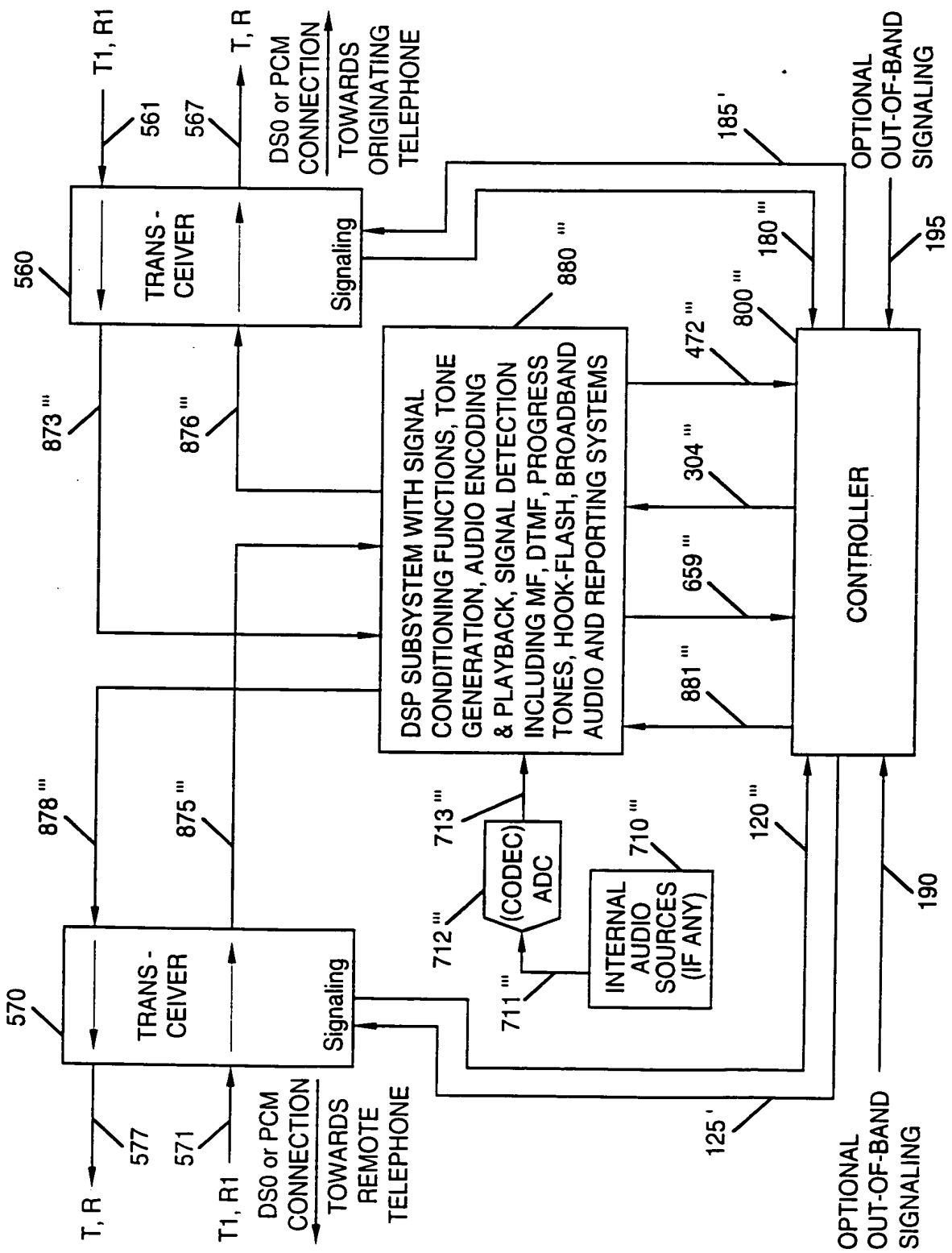

T1, R1
561
567
T, R
DS0 or PCM CONNECTION
TOWARDS ORIGINATING TELEPHONE
560
TRANS-CEIVER
Signaling
185'
OPTIONAL OUT-OF-BAND SIGNALING
195
880'''
180'''
800'''
472'''
873'''
876'''
DSP SUBSYSTEM WITH SIGNAL CONDITIONING FUNCTIONS, TONE GENERATION, AUDIO ENCODING & PLAYBACK, SIGNAL DETECTION INCLUDING MF, DTMF, PROGRESS TONES, HOOK-FLASH, BROADBAND AUDIO AND REPORTING SYSTEMS
304'''
659'''
881'''
CONTROLLER
878'''
875'''
713'''
(CODEC) ADC
712'''
710'''
INTERNAL AUDIO SOURCES (IF ANY)
711'''
120'''
190
570
TRANS-CEIVER
Signaling
577
571
T, R
T1, R1
DS0 or PCM CONNECTION
TOWARDS REMOTE TELEPHONE
125'
OPTIONAL OUT-OF-BAND SIGNALING

Figure 3D

Figure 4A

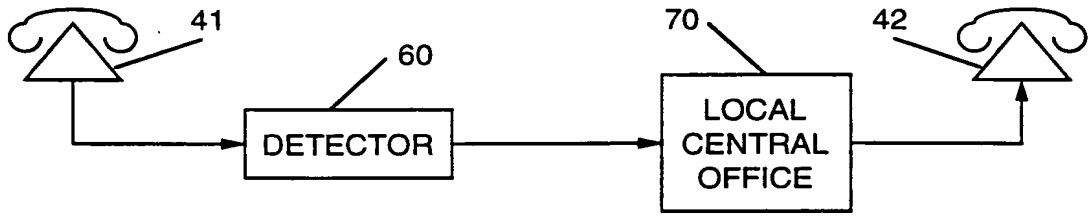


Figure 4B

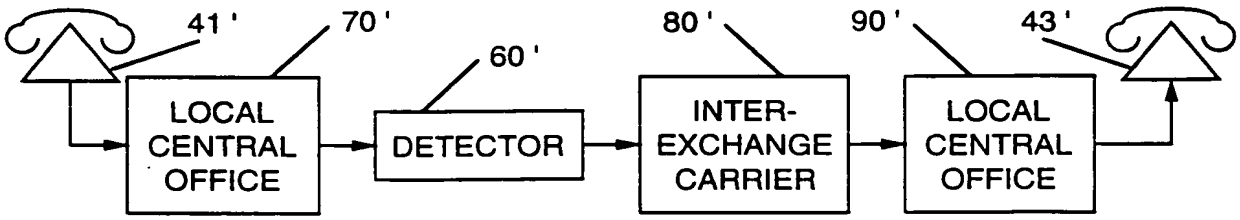


Figure 4C

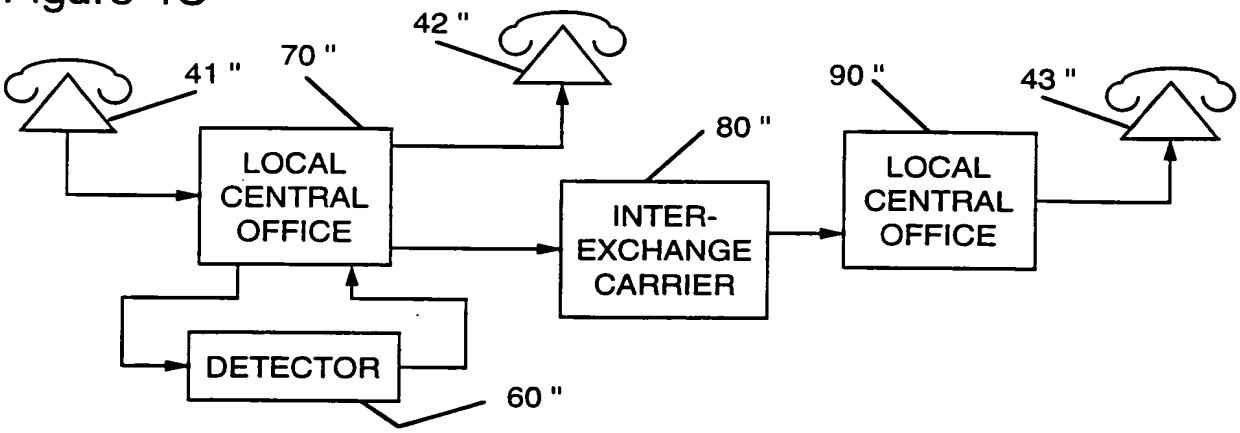


Figure 4D

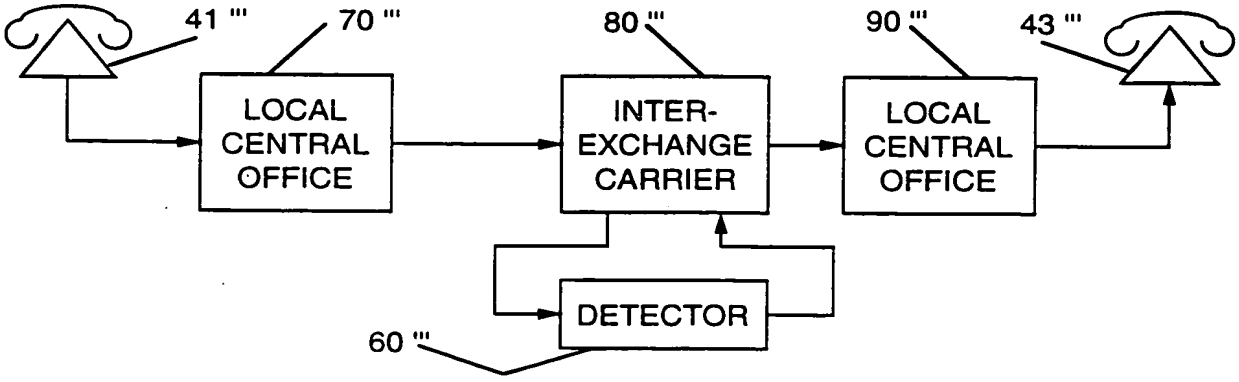
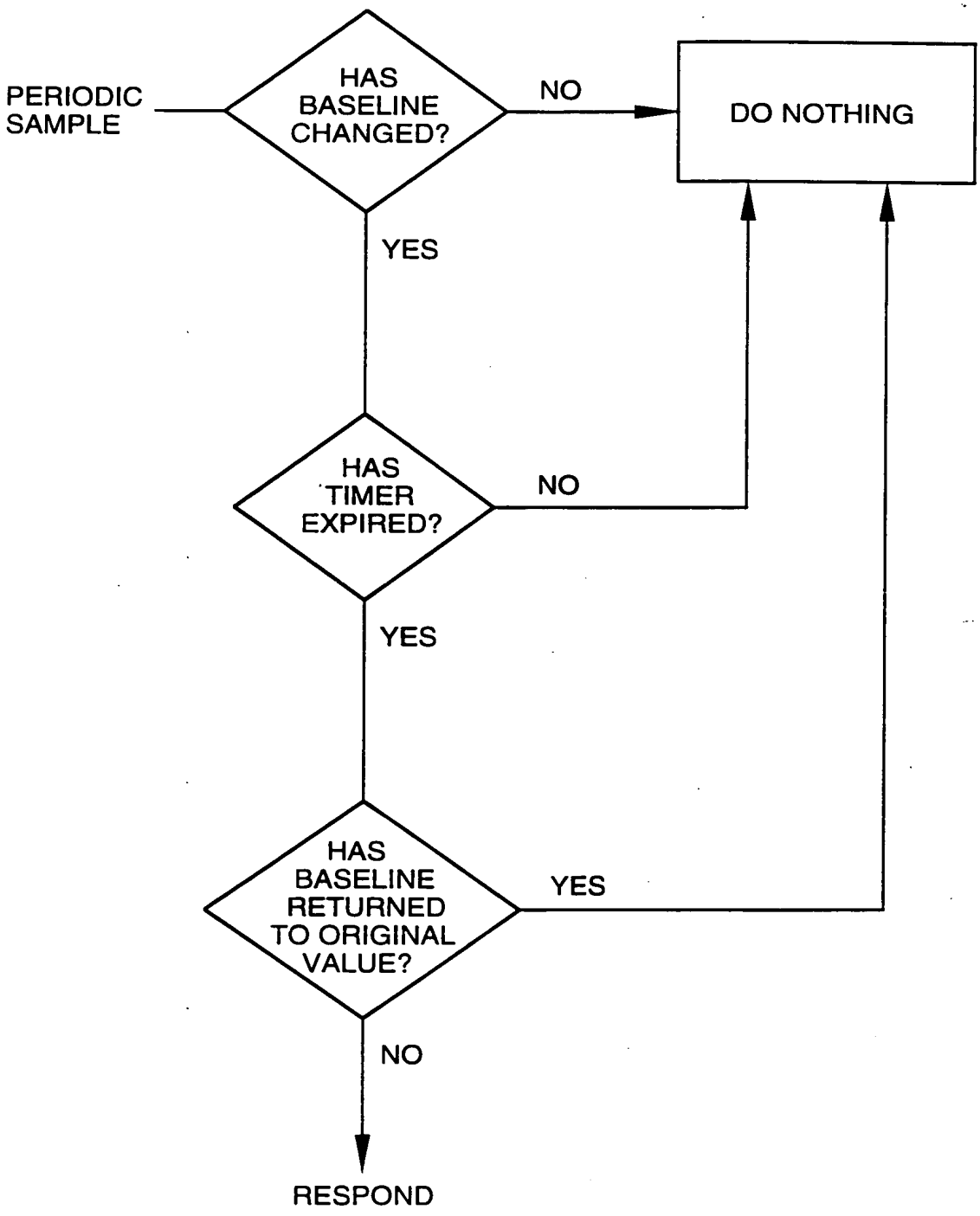


Figure 5



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